Safe-START

Pedestrian and Bicycle Safety
Priority Locations
Assessment & Recommendations

Mayor Joseph Curtatone

DATE: NOVEMBER 2006

Preliminary Assessment and Recommendations
for Discussion Only

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Message from Mayor Curtatone

For Somerville to be truly livable, it should be walk-able and bike-able – not only for our children, but for all of us.

As proposed in my January State of the City address, I convened a pedestrian and traffic safety task force that was asked to evaluate every aspect of our traffic and pedestrian systems – from crosswalks and signals to crossing guards and traffic-calming technologies. This report presents the preliminary findings of the task force, now referred to as the "Safe, Sustainable Transportation Assessment and Recommendation Team" or in short Safe-START.

In my address I tasked Safe-START to come back with two sets of recommendations: low-cost and procedural changes that we can undertake immediately to improve pedestrian safety and traffic flow, as well as long-term capital improvements.

I am pleased to report that Safe-START has moved ahead on this task. The Team has identified both immediate and long-term improvements. Through the auspices of the Traffic and Parking Department many lower cost improvements have been completed. The Police Department has worked to bolster the reserve of crossing guards, reviewed all school crossing guard locations and implemented adjustments to the deployment of crossing guards based on that review. Additionally, the Mayor's Office of Strategic Planning and Community Development took the lead in developing a School Zone Safety Brochure that the School Department has distributed to parents of school children.

Safe-START reviewed 27 priority locations through-out the City to determine possible alternatives for improving pedestrian safety. Safe-START has also proposed policy changes and design standards that should be implemented to improve pedestrian and bicycle safety through out the City.

The report that follows summarizes the results of assessments by Safe-START and provides recommendations for pedestrian and bicycle safety improvements. This preliminary report serves as an important beginning step towards building community support and marshalling resources to make substantial improvements to pedestrian and bicycle safety in Somerville. I look forward to working with the Board of Alderman, City Staff and the public as we proceed on this worthy initiative.

Joseph A. Curtatone
Mayor

CITY OF SOMERVILLE, MASSACHUSETTS

JOSEPH A. CURTATONE
MAYOR

MEMORANDUM

To: Mayor Joseph A. Curtatone, Department Heads

Subject: Draft Safe-START Plan

Date: November 2006

From: Safe-START members:

City Staff Leads:
Stephen P. Winslow, Project Manager
Terrence Smith, City Traffic Engineer, Traffic and Parking Department
Lieutenant Frank Kelley, Somerville Police Department
Aru Manrique, Multi-Cultural Commission Director
Charles O'Brien, City Engineer, Department of Public Works
Adam Waters, Assistant Engineer, Department of Public Works
Frank DiChiappari, Assistant Superintendent, School Department
Sonja Darai, Director, Somerville Commission for Women
Stephanie Hirsch, SomerStat

Elected Officials:
Robert Trane, Board Aldermen (Ward 7)
Roberta Bauer, School Committee (Ward 3)

Community Representatives:
Barbara Rubel, Community Relations, Tufts University
Peter Nowak, Safety Officer, Tufts University
Jessica Collins, Community Liaison, Cambridge Health Alliance

The Somerville Safe, Sustainable Transportation Assessment and Recommendation Team is pleased to forward the initial draft of our "Pedestrian and Bicycle Safety Priority Locations - Assessment & Recommendations" report that we have worked on since January of this year. We are pleased to report that many of the immediate recommendations of the Team have already been implemented. We look forward to discussing these assessments and recommendations further with the Board of Aldermen and with the Community and to ultimately implementing those recommendations supported by yourself, the Board of Aldermen and the affected neighborhoods.

Safe-START
Pedestrian and Bicycle Safety
Priority Locations
Assessment & Recommendations

Executive Summary

Safe-START *stands for the Safe, Sustainable Transportation Assessment and Recommendation Team*. Mayor Curtatone created Safe-START in January 2006 to acknowledge that for Somerville to be truly livable, it should be walk-able and bike-able – not only for our children, but for all of us.

Safe-START's Mission Statement is to increase safety for all travelers including pedestrians, bicyclists and motorists in order to create conditions on Somerville streets, intersections and sidewalks that increase the number of people who walk, bike and use other sustainable transportation.

Successful implementation of Safe-START's recommendations will create multiple benefits to the residents of Somerville by:

- Improving safety for residents whether they walk, bike, use transit or drive;
- Encouraging development patterns that support walking, transit and bicycling as the primary means of transportation;
- Better accommodating youth who cannot drive and seniors who no longer drive;
- Creating environmental benefits such as improved local air quality, reduction in greenhouse gases, reduced reliance on fossil fuels and less use of land for motor vehicle storage; and
- Promoting more active lifestyles that include more physical activity each day in order help reduce high obesity levels and increase the ability of students to concentrate during school.

Moderating speed plays a key role in pedestrian safety because the risk that a pedestrian struck by a vehicle will die rises from under 10% to over 70 % when speeds increase from 24 to 36 miles per hour.

Assessments of 27 Locations

The Team focused on pedestrian and bicycle safety by reviewing pedestrian and bicycle crash location data provided by the Central Transporatation Planning Staff (CTPS) and SomerStat. From this data, the Team identfied ten locations with high numbers of motor vehicles crashes involving pedestrians and eight locations with high numbers of such crashes involving bicyclists. With this data and input from City Staff, the school department, Tufts students and resident groups, the Team identified twenty-seven priority locations for in-depth assessment. Five of these locations are under the jurisdiction of Commonwealth's Department of Conservation and Recreation. The Team evaluated the D.C.R. locations due to the fact that several of these locations topped the list of crash locations.

Speed Kills
Moderating speed plays a key role in pedestrian safety because the risk that a pedestrian struck by a vehicle will die rises from under 10% to over 70 % when speeds increase from 24 to 36 miles per hour.

Immediate Actions

As a result of these assessments, the Team identified numerous immediate actions that have since been implemented by the Department of Traffic and

Parking for pedestrian safety including:

- re-striping between 750 and 800 crosswalk locations;
- deployment of 14 mid-street pedestrian crossing warning signs;
- installation of 60 brighter crosswalk signs and 40 replacement stop signs;
- use of safety reflective sticks at 75 crosswalk locations and 25 stop sign locations; and
- striping 'no parking zones' at two of priority locations.

The Police and School Department re-evaulated all 59 crossing guard locations, recruited more guards and eliminated or re-deployed guards from a few locations. Additionally, the School Department with the assistance from SPCD distributed "School Zone Safety" fliers to parents of students.

Near Tufts University crosswalks, brighter pedestrian crossing signs and a mid-street pedestrian warning sign have been placed at Wallace and Broadway (the location where a Tufts Student was struck and killed in November 2005). The Somerville Police Department also undertook additional speed enforcement.

Bicycle safety has been enhanced by new bike lane striping along Washington Street, brighter warning signs near the Community Path and signage for bicyclists through Davis Square.

City-Wide Recommendations

A. All Traffic Lights, when upgraded, should include pedestrian countdown lights.

B. The City should purchase infrared—thermal heating equipment for pothole repairs.

C. Educational materials for Parents and Children should be done both in relation to Safe Routes to School to promote walking to school and to make parents who drive children more aware of the need to watch carefully for students walking to school and to other vehicles. These materials should include good graphics and be translated into appropriate languages to educate parents as well.

D. Continue to update Safe Routes to School maps.

E. Continue Somerville's forward thinking program of requiring construction projects using sidewalks or near sidewalks to provide temporary accommodations for pedestrians such as having a protected walking in the street, using scaffolding or installing crosswalks to the other side of the street.

F. Educational efforts should also seek to collaborate with other cities and regional education programs.

G. The City must advocate to DCR, the State Police and our legislative delegation for improvements and enforcement on DCR-owned highways and parkways.

Long-Term Recommendations

The Team developed a detailed list of recommendations for the twenty-seven priority locations, school zones and parks. The recommendations include:

A. Installation of pedestrian safety tables (aka traffic calming tables) or other traffic calming measures at up to 30 locations across the City including many high priority locations and other locations including those near schools and parks; the initial locations of these tables should be reviewed with emergency responders and the community in order to ensure the implementation of the most appropriate measures for the location;

B. Installation and work with other entities to repair or install ADA ramps at 12 high priority locations;

C. Placement of bollards near entry areas of all elementary schools and make additional streetscape changes around several schools to improve the safety of children arriving and leaving school;

D. Development of "Gateways" to key nodes around the City including Davis Square, Union Square and Tufts that will highlight that motorists are entering high pedestrian traffic areas;

E. Upgrades to traffic signals to better accommodate pedestrians and bicyclists in the course of new developments and major road reconstruction projects;

F. Implementation of other pedestrian safety improvements such as installing new sidewalks in a few locations where they are lacking, install bulb-outs at crossings where pedestrian safety tables will not be appropriate, new lighting along some street corridors and crossing locations, pilot-test solar-powered pedestrian warning lights.

G. Construction of a raised intersection at Cameron Avenue and Holland Street.

H. Coordination with Department of Conservation and Recreation and MassHighway:

Major projects such as the reconstruction of Somerville Avenue and Beacon Street will include streetscape and traffic calming measures that will make walking and bicycling on these streets both safer and more enjoyable.

The Route 28 Corridor has many of the most dangerous locations for pedestrians and bicyclists in the City including interchanges with Mystic Avenue, Washington Street and Somerville Avenue. Traffic improvements to this corridor must result in significant improvements to pedestrian and bicycle safety.

Union Square as a major hub for both local and sub-regional traffic presents a major challenge for all modes of transportation. The City will continue to study and implement improvements to Union Square that will appropriately accommodate pedestrians and bicyclists.

Estimated Costs of Long-Term Improvements

The Team developed cost estimates of various improvements. Costs of pedestrian safety tables constitute the largest potential portion of the improvement costs. Cost for these tables have been reported to vary greatly depending on the complexity of any drainage and utility issues along with the aesthetic quality of the materials used. Cost reports vary from $30,000 to $100,000 per table. This estimate used the highest figure. The cost estimate does not include funding for major state-funded projects such as Somerville Avenue, Beacon Street and McGrath Highway reconstruction, for which the City may have to provide a match.

The overall estimated construction costs for the entire list of improvements recommended by the Team comes to between $4.4 and $4.7. million. The Team recommends budgeting funds to hire a firm to assist the City plan and design major improvements. The Team recommends a five-year implementation timetable. Factoring inflation and contingencies the total estimated costs of implementing these improvements totals $6.7 million to $7.1 million, or about $1.42 million per year over a 5-year period.

I. Introduction to Safe-START

SAFE-START STANDS FOR THE "SAFE, SUSTAINABLE TRANSPORTATION ASSESSMENT AND RECOMMENDATION TEAM.

The team includes representatives from various office and departments within the City. Stephen Winslow of the Mayor's Office of Strategic Planning and Community Development serves as the Project Manager for Safe-START. Representatives from other offices include:

Jospeph A. Curtatone, Mayor
Robert Trane, Board of Alderman
Roberta Bauer, School Committee
James Kotzuba, Director, Traffic and Parking Department
Terrence Smith, City Traffic Engineer, Traffic and Parking Department
Lieutenant Frank Kelley, Somerville Police Department
Aru Manrique, Director Multi-Cultural Commission
Charles O'Brien, City Engineer, Department of Public Works
Adam Waters, Assistant Engineer, Department of Public Works
Frank DiChiappari, Assistant Superintendent, School Department
Sonja Darai, Director, Somerville Commission for Women
Stephanie Hirsch, SomerStat

Representatives from two local institutions participated heavily in the process including:

Barbara Rubel, Community Relations, Tufts University
Peter Nowak, Safety Officer, Tufts University
Jessica Collins, Community Liaison Cambridge Health Alliance

Other City officials were regularly updated on the status of Safe-START including

James Kostaras, Executive Director, Office of Strategic Planning and Community Development
Lisa Lepore, Transportation Planner, Office of Strategic Planning and Community Development
Cindy Hickey, Director, Council on Aging
Stanley Koty, Department of Public Works Commissioner
Michael Buckley, Department of Public Works
Thomas Champion, Director of Communications
Janice Delory, Mayor's Office
Michael Lambert, Mayor's Office

Safe-START's Mission Statement: To increase safety for all travelers including pedestrians, bicyclists and motorists in order to create conditions on Somerville streets, intersections and sidewalks that increase the number of people who walk, bike and use other sustainable transportation.

Safe-START has been formed due to a need to:

- Address community concern that streets, intersections and sidewalks in Somerville need to be made safer for pedestrians and bicyclists and to re-evaluate and improve current practices in the City that promote pedestrian safety such as the school crossing guard program;

- A desire to increase public awareness and involvement in efforts to improve traffic safety through engineering, education and enforcement efforts ;

- Ensure that Somerville can become an exceptional place to live, work and play by promoting development patterns that strongly support walking, transit and biking as the primary means of transportation while accommodating motor vehicles in that context, using Davis Square as a strong model of success that should be replicated;

- Pursue environmental benefits of sustainable development including improved local air quality, reduction in greenhouse gases, reduced reliance on fossil fuels and less use of land for motor vehicle storage;

- Promote more active lifestyles that include 30-minutes of physical activity each day in order help reduce high obesity levels and increase the ability of students to concentrate during school, and;

- Accomodate youth who cannot drive and seniors who no longer drive.

A. Somerville Pedestrian and Bicycle Crash Trends and Locations

The Somerville Police and the Massachusetts State Police are required by state law to record and report roadway crash information including information on crashes involving pedestrians and bicycles. The police send these reports to the Commonwealth. The Central Transportation Planning Staff (CTPS) reviews and codes the crash data into a geo-coded database that allows for crash locations maps to be developed. Table 1 summarizes statewide crash data. Those data show that fatal crashes involving pedestrians greatly exceed the percent of people who typically walk. From 2002 to 2004, pedestrians comprised 18% of crash victims although pedestrians comprised only 4% of the total commuters.

TABLE 1

2002-2004 Massachusetts Fatal Crash Statistics

	2002	2003	2004
Fatal Crashes	433	434	447
Drivers Killed	238	241	234
Motorcyclists Killed	58	35	58
Pedestrians Killed	59	86	82
Bicyclists Killed	6	11	11

Pedestrians Killed – 18% of total fatalities
Percent of commuters that drive alone – 73.4%
Percent of commuters that carpool – 8.8%
Percent of commuters that take public transportation – 9.9%
Walked – 4%
Other means – 1.0%
Worked at home – 2.9%

Bureau of Transportation Statistics and Mass Gov website

Safe-START requested that CTPS provide data on all crashes involving vehicles, pedestrians or bicyclists, and maps plotting the data. CTPS provided maps of pedestrian and bicycle crash locations including data from 1999 to 2001 and crash location data from 2002 to 2004. From 2002 to the end of 2004, 139 reported crashes (fatal and non-fatal) involving pedestrians and 85 crashes involving bicyclists occurred in Somerville. These crashes involved a single vehicle striking a pedestrian or bicyclist. As a percent of overall crashes, pedestrian accidents are almost 2/3 less than the comparable pedestrian mode share. Bicycle crashes are 20% less than comparable bicycle commuter mode share.

2002-2004 Somerville Total Crash Statistics

	2002	2003	2004	Total
Total Crashes (Vehicle/Ped/Bike)	1298	1015	1543	3856
Pedestrians	49	40	50	139
Bicyclists	20	33	32	85

Total Fatalities 2002-2004: 7
Pedestrian Fatalities: 1
Bicycle Fatalities: 1

Pedestrian Crashes – 3.6% of total crashes
Bicycle Crashes—2.2 % of total crashes

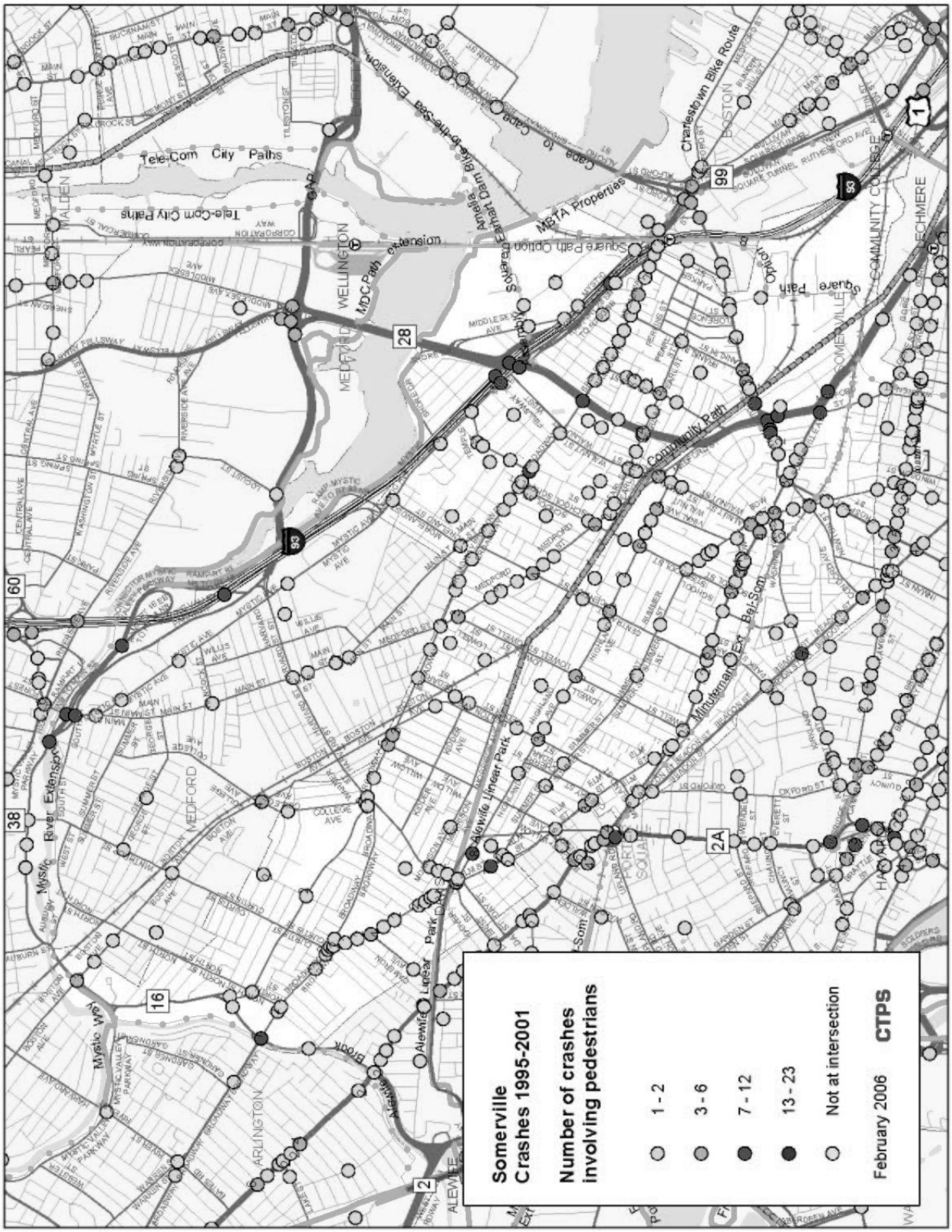
Source CTPS
Somerville Mode Share for Commuter from the 2000 Census:
Walked – 9.2%
Bicycle—2.7%
Other means – 88.1%

CTPS provided maps plotting the crash locations for the 1995 to 2001 time period. Map 1 shows pedestrian accident locations for this time period. Intersections with seven or more pedestrian crashes during that period include:

1. Washington Street at McGrath: 35 crashes
2. Mystic Avenue at McGrath: 28 crashes
3. Davis Square: 20 crashes
4. Grove@ Highland or Elm: 15 crashes
5. Union Square Area: 14 crashes
6. Somerville Avenue at McGrath: 14 crashes
7. Beacon at Washington: 7 crashes
8. Broadway at McGrath: 7 crashes
9. Broadway at Alewife Brook Parkway: 7 crashes
10. Broadway at Temple St: 7 crashes

Map 1— Crashes involving Pedestrians

1995-2001



Map 2 shows bicycle crash locations for this time period. Intersections with four or more bicycle crashes during that period include:

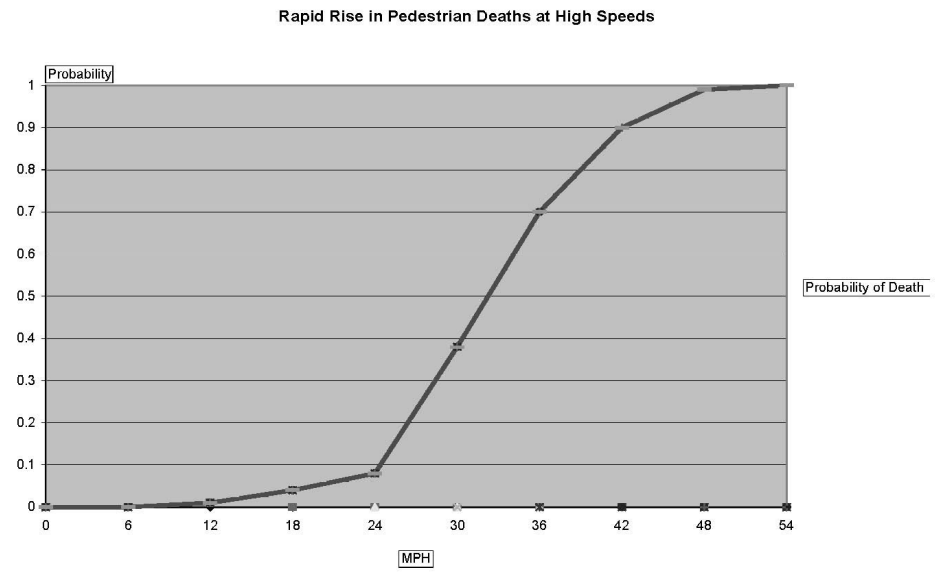
1. Washington Street at McGrath: 50 crashes
2. Somerville Avenue at McGrath: 30 crashes
3. Union Square Area: 8 crashes
4. Broadway at McGrath: 7 crashes
5. Grove@ Highland or Elm: 4 crashes
6. Somerville Avenue at Dane: 4 crashes
7. Beacon at Washington: 4 crashes

Five of the ten locations with high numbers of pedestrian crashes and three of seven locations with high bicycle crash locations are located on roadways owned and managed by the Commonwealth's Department of Conservation and Recreation. Safe-START realizes that the City cannot implement improved engineering designs or increase enforcement at these locations. The team decided to assess and make recommendations on DCR-controlled intersections with the expectation that the City will need to work with DCR and the City's legislative delegation to address safety improvements at these locations.

B. Traffic Speed and Pedestrian Safety

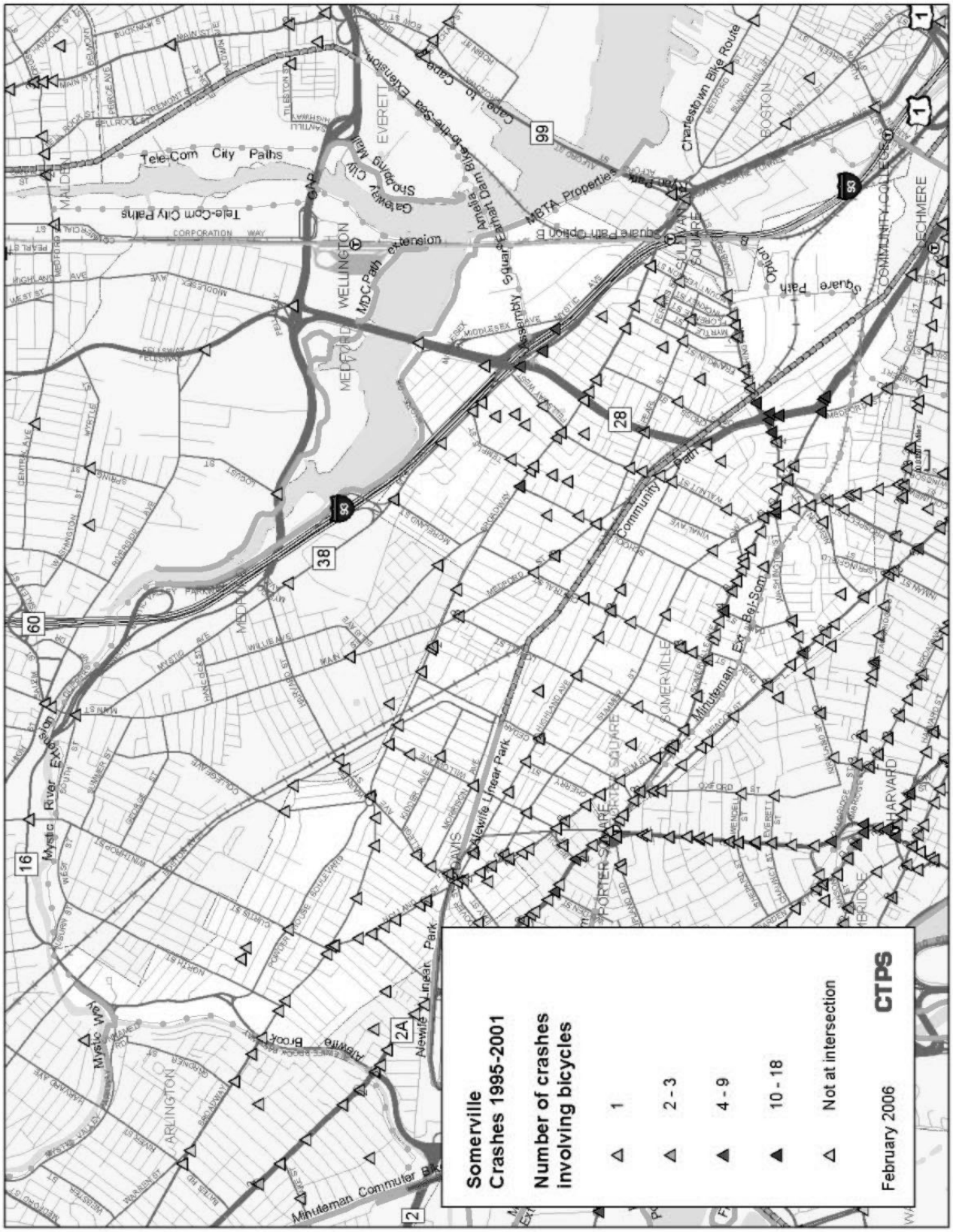
In addition to locations where crashes frequently involve pedestrian and bicycles, the Team sought to identify locations where a dangerous combination of traffic speed and pedestrian traffic occur. These location may not have the high levels of foot traffic of Davis or Union Square and so they may not have frequent crashes. However, when crashes do occur they may be more likely to cause serious injury or death to the pedestrian.

Traffic speed is a major risk factor in the deaths of pedestrians. The risk of pedestrian death increases from under 10% to 70% between 24 and 36 miles per hour. Identifying and addressing locations where speeds regularly equal or exceed 35 miles an hour can significantly enhance pedestrian safety.



Map 2— Crashes involving Bicyclists

1995-2001



C. PRIORITY LOCATIONS

Selection Methodology

The Team primarily focused on various sources of data to help identify priority locations including:

- Data and maps of pedestrian and bicycle crash locations since 1995;
- The transportation section of the Somerville Community Development Plan developed by the Office of Strategic Planning and Community Development;
- Data and maps of pedestrian and bicycle crash locations for 2004 and 2005 provided by SomerStat's review of 911 police report data;

The Team also received input from several ongoing pedestrian safety initiatives including:

- Information from community groups such as East Somerville Neighbors for Change, the Wallace Street Neighbors and Tufts University staff;
- Responses to requests by Lt. Kelley and Assistant Superintendent Frank DiChiappari to School Principals asking them to identify areas around the schools that warranted further review.

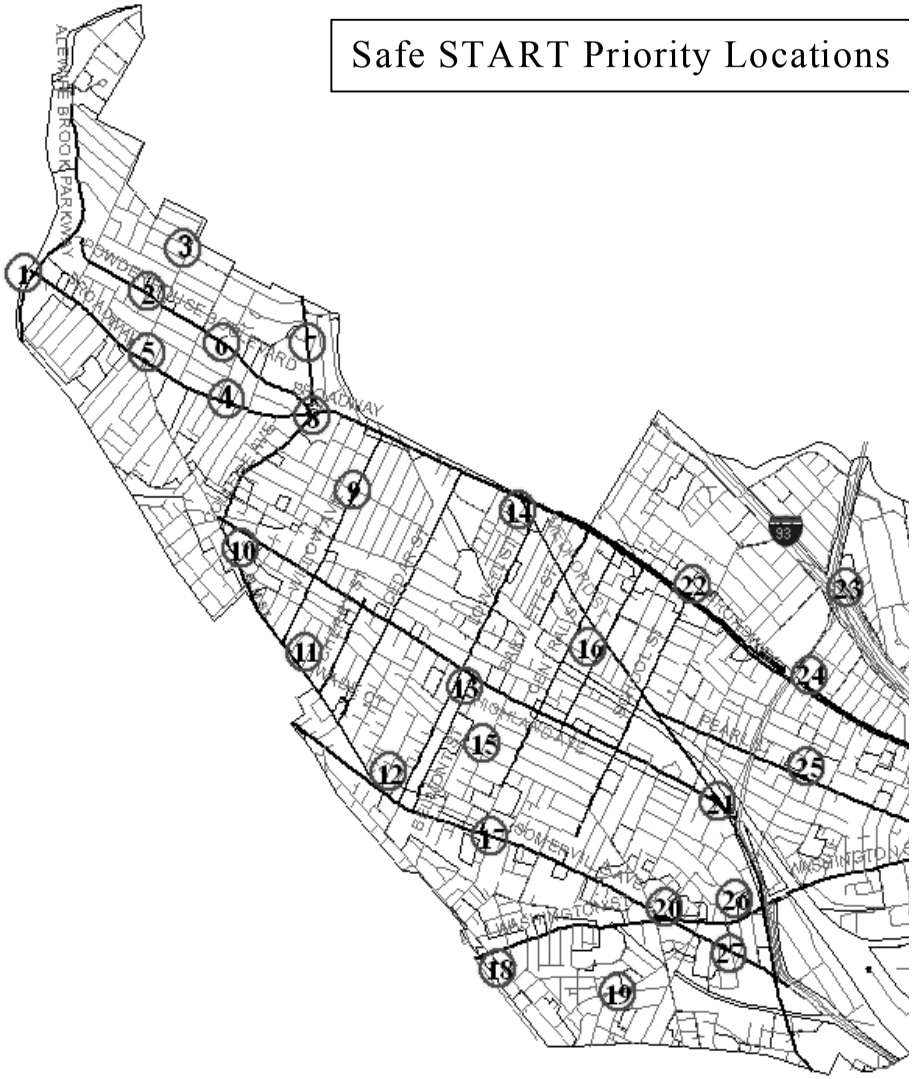
The Team realized that opening up the process of selecting priority locations to the public at large could quickly overwhelm the assessment effort and could also create an unrealistic expectation that the City intends to or has the resources to correct every area where there are risks or conflicts between vehicles, pedestrians and bicyclists. [Note: Cambridge took a very similar approach when developing recommendations that were included in its pedestrian and bicycle plan]. A plan to request the Aldermen identify a limited number of additional locations has not been fully implemented at this time but could be readily implemented after the release of this preliminary report. Safe-START did assess a number of locations based on non-solicited comments from members of the Board of Alderman.

Safe-START initially identified the 27 priority locations on the map on the following page. These locations include:

1. Broadway @ Alewife Brook Parkway
2. Raymond @ Curtis (near West Somerville Neighborhood School)
3. Curtis from Broadway to the Medford City Line
4. Broadway from Powderhouse to Packard: Special Focus Wallace Street Crossing
5. Holland Street from Teele Square to Davis Square
6. Powderhouse Boulevard from Powderhouse Square to North Street
   Special Focus: North Street
7. College Avenue from Powerderhouse Square to the Medford City Line
8. Powderhouse Square (Broadway/Powderhouse Boulevard and College Avenue)
9. Brown School (Josephine & Kidder)
10. Grove Street @ Highland and Grove Street @ Elm Street (near Davis Square)
11. Elm St @ White
12. Somerville Avenue @ Beacon & Elm
13. Highland @ Lowell
14. Magoun Square (Broadway @ Medford)
15. Summer St. near St. Catherine's School
16. Winter Hill School (Sycamore @ Medford)
17. Somerville Ave @ Park & Central
18. Washington St @ Beacon St
19. Springfield @ Concord
20. Union Square
21. Medford @ Highland
22. Broadway @ Temple & School
23. McGrath Highway @ I-93 and Mystic Avenue + Kensington Street Underpass
24. East Broadway
    a. From McGrath Highway to the Boston City Line
    b. McGrath Highway @ Broadway
25. Cross Street near East Somerville Community School
    Lincoln Park School @ Edgerly
26. Washington Street @ McGrath Highway
27. Somerville Avenue @ McGrath Highway

Appendix A lists the locations and why each priority location was selected. The Department of Traffic and Parking also provided a list of potential locations for pedestrian safety tables.

Safe START Priority Locations



1. Broadway @ Alewife Brook Parkway
2. West Somerville Neighborhood School
3. Curtis from Broadway to the Medford Line
4. Broadway from Powderhouse to Packard
5. Holland Street
6. Powderhouse Boulevard
7. College Avenue
9. Powderhouse Square
8. Brown School
9. Grove Street
10. Elm St @ White
11. Somerville Avenue @ Beacon & Elm
8. Highland @ Lowell
9. Magoun Square (Broadway @ Medford)
10. Summer St. near St. Catherine's School
11. Winter Hill School (Sycamore @ Medford)
8. Somerville Ave @ Park & Central
8. Washington St @ Beacon St
9. Springfield @ Concord
10. Union Square
11. Medford @ Highland
12. Broadway @ Temple & School
13. McGrath Highway @ I-93 and Mystic
14. East Broadway
    a. From McGrath to Boston City Line
    b. McGrath Highway @ Broadway
25. East Somerville Com. School & Lincoln Park School @ Edgerly
26. Washington Street @ McGrath Highway
27. Somerville Avenue @ McGrath Highway

D. School Locations

1. Crossing Guards

A large percentage of Somerville school children walk to school each day. Data collected by the Shape-up Somerville program in 2004 indicates that between 23% and 57% of first, second and thrid grade students walked to school. A 2006 survey revealed that 48% of 6th to 12th grade students walk to school.

Crossing guards play a vital role in ensuring that students reach school safely. In conjunction with Safe-START the Police Department and the School Department evaluated school crossing guard locations. That analysis including head counts and observation of traffic at 59 locations. The review committee determined that 36 of the 59 locations were Priority One locations where proximity to schools, number of students, traffic volume and observed speed indicated a strong need for a crossing guard.

Twenty three locations were further examined by the review team. The team recommended the elimination of crossing guards at five locations where schools have closed or have low student counts. Appendix F contains the complete list of locations and recommendations.

Number of Lower Grade Students Walking to School
Source: Shape-Up Somerville

School	Size of Class	% Walking
Brown	74	42%
Capuano	64	52%
Cummings	56	37%
East Somerville	137	57%
Healey	182	48%
Kennedy	133	30%
Lincoln	126	30%
Powder House	134	23%
West Somerville	69	38%
Winter Hill	109	56%
Total	1084	

2. School Zone Safety

Traffic congestion peaks around schools during pick-up and drop-off times. Conflicts often arise between school parents, neighbors and children walking to and from school. Unsafe and uncourteous behaviors can discourage parents from allowing children to walk to school, further adding to traffic congestion. The Team worked with school principals to develop a School Zone Safety brochure to hand out to parents. The brochures provide safety tips for both drivers and walkers. Each principal provided specific directions to parents related to school zone safety.

3. Priority Schools Zones

School zones around the West Somerville Neighborhood School, Brown School, Winter Hill Neighborhood School and East Somerville Neighborhood School were specifically studied due to recommendations from the School Department. The Police Department also recommended that area near St. Catherine's School on Summer Street be assessed. Pedestrian safety tables and changes to the areas leading to entries and exists were also recommended.


Somerville Public School Locations
INTERSTATE 93
MYSTIC RIVER
MYSTIC AVENUE
MEDFORD STREET
McGRATH HIGHWAY
PEARSON ROAD
BROADWAY
HIGHLAND AVENUE
ELM STREET
SUMMER STREET
SOMERVILLE AVENUE
BEACON STREET
HEALY SCHOOL
ARGUES STREET
BROADWAY
WINTER HILL SCHOOL
EDGERLY EDUCATION CTR
SOMERVILLE HIGH
SOMERVILLE SCHOOL
CUMMINGS SCHOOL
DECATUR/LEARY
LINCOLN PARK SCHOOL
BROWN SCHOOL
KENNEDY SCHOOL
WEST SOMERVILLE NEIGHBORHOOD SCHOOL
MATIGNON HIGH SCHOOL
POWDERHOUSE SCHOOL

4. General Recommendations for School Zones

The Team recommends that bollards be placed along the sidewalks leading to the main entry and exit doors of schools in order to make students and motorists more aware and to block an out-of-control motor vehicle from driving into a group of students arriving or waiting to be picked up.

The Team also recommends that pedestrian safety tables be considered at eightschools in addition to the five priority locations for schools.

E. Parks & Other Locations

The Department of Traffic & Parking also recommended five other areas around parks that would be appropriate for pedestrian safety tables, including the Marshall Street Playground, Florence Street Playground, Prospect Hill, Hodgkins Park and Trum Field.

T&P provided five crosswalk locations that were recommended for pedestrian safety tables including:

- Dover at Orchard (now a 4-way stop)
- Elm at Chester
- Willow at Summer
- Perry Park at Wyatt Street
- Washington Street at Perry Park

F. Private Development

The 111 South Street Development near Boynton Yards will include 4 pedestrian safety tables as means to encourage a pedestrian-orientated development. The development will also be one of the first to comply with the bicycle parking ordinance adopted by the Somerville Board of Aldermen in 2005.

III. Assessment & Recommendations

A. Assessment Methodology

1. Assessment Forms

SPCD developed an assessment form with input from the whole Team (see Appendix B). The Team divided up the locations and did assessment during primarily during daylight hours during February and March 2006. For certain locations pedestrian, bicycle and motor vehicle counts were also conducted in order to assess priorities for follow-up measures. The counts were conducted during peak hours on different days. The information collected has been developed into an Access database that can be used to track improvements over time.

2. **Improvement Measures**

The Shape-Up Somerville program hired Mark Fenton, PE a nationally recognized expert on walking and walkability to attend the March 29, 2006 Safe-START meeting hosted by Tufts University. Mr. Fenton made a presentation of the various types of measures communities nation wide are implementing to improve walkability and reduce traffic speed. Appendix C provides information about the various types of measures considered.

3. **Development of Classifications of Improvement Measures**

The Team anticipates that funds for immediate actions will initially be modest. Also more complicated and costly measures would also take longer to plan and implement. As a result the Team decided to create classification of the improvement measures. The Team used three classifications A, B and C to identify measures.

> **Class A:** "Major Road and Intersection Reconfigurations": Actions involving substantial reconstruction of a road or and intersection. [Cost $30,000 or more]
>
> **Class B:** "Curbs & Concrete"
> Spot Improvements / Minor retrofits such as curb cuts, bulb-outs, alert signs, traffic diverters that require limited road reconstruction [Cost from $1000 to $30,000]
>
> **Class C:** "Signs & Paint", Education and/or Enforcement
> Improvements, Repair & Maintenance that do not require any "construction" [Cost under $1000 per location]

4. **Initial Selection of Improvement Measures for Priority Locations**

The Bicycle and Pedestrian Coordinator took and/or gathered existing digital photos of the locations and put together a PowerPoint presentation of the locations. During a series of three meeting the Team reviewed the locations. One meeting focused on East Somerville and included residents of East Somerville. The discussion began with a review of the photos and an introduction by the Team member who conducted the assessment.

B. Recommendations for Priority Locations

The Team worked to identify and classify various improvement measures that can improve safety conditions for pedestrians, bicyclists and motorists. The improvements listed in this initial draft should be viewed as a menu of options to guide decision makers and should not be considered a list of firm recommendations. The most substantial improvements will likely require more detailed studies and designs developed by road designers.

1. General Recommendations for Improvements

a) All Traffic Lights,when upgraded, should include pedestrian countdown lights

b) The City should purchase infrared—thermal heating equipment for pothole repairs.

c) Educational materials for adults and children should be done both in relation to Safe Routes to School to promote walking to School and to make parents who drive children more aware of the need to watch carefully for students walking to school and to other vehicles. These materials should include good graphics and be translated into appropriate languages to educate parents as well.

d) Continue to update Safe Routes to School maps using high school students.

e) Continue Somerville's forwarding thinking program of requiring construction projects using sidewalks or near sidewalks must provide temporary accommodations for pedestrians such as having a protected walking in the street, using scaffolding or installing crosswalks to the other side of the street.

f) Education Efforts should also seek to collaborate with other cities and regional education efforts since many motorists do not reside in Somerville. The City should push for regional education efforts on pedestrian and bicycle safety through the Governor's Highway Safety Bureau for pedestrians, bicyclists and motorists.

g) The City must advocate to DCR, the State Police and our legislative delegation for improvements and enforcement on DCR-owned highways and parkways.

The Team reviewed each of the locations and proposed a list of possible improvements. At this point the intent of the list of possible improvements is to generate further discussion with the public, provide guidance to the Mayor and Board of Aldermen on the type and cost for both short-term and long-term planning purposes. The Assessment and Possible Improvements are as follows: (see following pages).

2. Immediate Actions—Implemented Since January 2006

Pedestrian Safety

A. The Traffic & Parking Department continued with the three year effort to re-paint all the crosswalks in the City with brighter, longer lasting thermoplastic striping. Since the inception of this program, T&P has re-striped between 750 and 800 separate crosswalk locations. Many of these locations have been re-striped with "ladder" type crosswalks which stand out more to motorists.

B. T&P has also initiated several special striping initiatives including striping "No Parking" zones near 2 key crosswalks and intersections; re-striping the Washington Street bike lanes and putting down larger bike lane symbols.

C. Newer, phosphorescent Pedestrian Crossing signs have been placed as needed at the priority locations around the City. These include new "arrow" signs that indicate the exact location of the crosswalk and advance signs that warn motorists of an upcoming crossing. Sixty of these new signs have been installed. .

D. Safety reflective sticks have been places on sign poles around the City including 75 at crosswalks and 25 red strips at stop signs. Forty stop signs have been replaced

E. The Police Department has undertaken speed enforcement efforts on key streets including Broadway and Powderhouse Boulevard.

F. Mid-street pedestrian crossing signs have been placed at 14 key crosswalks through out the City with the assistance of the Ward Aldermen.

G. SPCD initiated the design of ADA ramps and undercrossings in the Assembly Square area.

H. T&P installed 700 regulatory signs through-out the City to aid with safety and traffic flow.

I. SPCD participated in DCR's pedestrian and bicycle maintenance task force and recommended improvements on McGrath Highway, re-striping of crosswalks on Alewife Brook Parkway and at Washington Street and McGrath. DCR also fixed streetlights that were out on the Route 28 bridge leading from Ten Hills to Wellington Station.

Schools

SCHOOL ZONE SAFETY

I. The Office of Strategic Planning and Community Development with assistance from a Tufts University Intern developed a School Safety Zone Brochure for each individual school. The School Department distributed the brochure to parents at the start of the school year.

J. The Police Department re-evaluated all 59 crossing guard locations.

K. Traffic & Parking repainted 35 "School Zone" markings.

Tufts University Area

L. Crosswalks, brighter pedestrian crossing signs and a mid-street pedestrian warning sign have been placed at Wallace and Broadway

M. Tufts has installed a new sidewalk along Packard Street in area where students walked in the street in bad weather due to muddy conditions.

N. The Police Department has undertaken speed enforcement efforts on key streets including Broadway and Powderhouse Boulevard.

Bicyclists

O. Traffic & Parking with assistance from SPCD restriped the Washington Street lanes, put down larger, brighter thermoplastic bike lanes symbols that are more visible to motorists, and added bike lane signs.

P. 'No Bikes on Sidewalk' stencils have been added in Union Square.

Q. An on-road route for bicyclists using the Somerville Community Path through Davis Square has been developed by the Bicycle Committee and SPCD, and T&P has installed new signs.

R. Brighter warning signs have been placed on the Community Path crossings along with mid-street signs.

S. DPW is ordering new thermal pothole repair equipment to make smoother, longer lasting repairs to potholes.

3. Immediate Actions— To Be Implemented

A. Re-stripe Broadway near Alewife Brook Parkway to create a mid-street pedestrian refuge (T&P and DPW)

B. Install a crosswalk at Curtis and Chetwynd (T&P)

C. Stripe shoulder stripe or bike lanes on Broadway and Powderhouse Boulevard to help reduce traffic speeds (T&P)

D. Review options to speed up light cycle for pedestrians at Teele Square (T&P)

E. Restripe Powderhouse/ Leonard Street Crosswalk (DPW)

F. Consider adding resident-only signs to North Street (T&P)

G. Re-align pedestrian signal heads through-out the City that have been mis-aligned including: (DPW)
- North Street and Broadway;
- Lowell and Highland;
- School and Medford;
- Warner Street at Powderhouse Square

H. Maintain Traffic Signals by: (DPW)
- Fixing Pedestrian Button Near Doherty's in Powderhouse Square
- Replacing Pedestrian Signal At Lombardi Way on Broadway
- Adding Pedestrian Button at Franklin and Broadway
- Add a Pedestrian Button at Cross and Broadway near the Youth/Senior Center

I. Add "Two-Way Street" sign at Grove Street (T&P)

J. Fill Beacon Street potholes that could impact bicyclists (DPW)

L. Add time to pedestrian phase at Highland and Medford (T&P)

M. Replace Crosswalk signs at Kensington Street (MHD)

N. Re-orientate storm drains on Fellsway South near Mystic Avenue (DCR)

O. At McGrath and Broadway add "Stop here" signs before Crosswalks (DCR)

P. Do speed enforcement of traffic heading into and out of major Squares (SPD)

Q. Develop educational materials to remind pedestrians to dress more brightly at night.

R. Re-stripe crosswalks at Broadway and Alewife Brook Parkway (DCR)

S. Re-stripe crosswalks at Washington Street and McGrath Highway (DCR)

4. Summary of Recommendations for Long-term Improvements

A. Install pedestrian safety tables (aka traffic calming tables) or other traffic calming measures at up to 30 locations across the City including many high priority locations and other locations including near schools and parks; the initial locations of these tables should be reviewed with emergency responders and the community in order to ensure the implementation of the most appropriate measures for the location;

B. Install and work with other entities to repair or install ADA ramps at 12 high priority locations;

C. Place bollards near entry areas of all elementary schools and make additional streetscape changes around several schools to improve the safety of children arriving and leaving school;

D. Develop "Gateways" to key nodes around the City including Davis Square, Union Square and Tufts that will highlight that motorists are entering high pedestrian traffic areas;

E. Upgrade traffic signals to better accommodate pedestrians and bicyclists in the course of new developments and major road reconstruction projects;

F. Implement other pedestrian safety improvements such as installing new sidewalks in a few locations where they are lacking, install bulb-outs at crossings where pedestrian safety tables will not be appropriate, new lighting along some street corridors and crossing location, pilot-test solar-powered pedestrian warning lights.

G. Construct a raised intersection at Cameron Avenue and Holland Street.

C. Coordination with Department of Conservation and Recreation and MassHighway

Major projects such as the reconstruction of Somerville Avenue and Beacon Street will include streetscape and traffic calming measures that will make walking and bicycling on these streets both safer and more enjoyable.

The Route 28 Corridor has many of the most dangerous locations for pedestrians and bicyclists in the City including interchanges with Mystic Avenue, Washington Street and Somerville Avenue. Traffic improvements to this corridor must result in significant improvements to pedestrian and bicycle safety.

Union Square, as a major hub for both local and sub-regional traffic presents a major challenge for all modes of transportation. The City will continue to study and implement improvements to Union Square that will appropriately accommodate pedestrians and bicyclists.

D. Estimated Costs of Long-Term Improvements

The Team developed cost estimates of various improvements. Costs of pedestrian safety tables constitute the largest potential portion of the improvement costs. Cost for these tables have been reported to vary greatly depending on the complexity of any drainage and utility issues along with the aesthetic quality of the materials used. Cost reports vary from $30,000 to $100,000 per table. This estimate used the highest figure. The cost estimate does not include funding for major state-funded projects such as Somerville Avenue, Beacon Street and McGrath Highway reconstruction, for which the City may have to provide a match.

The overall estimated construction costs for the entire list of improvements recommended by the Team comes to between $4.4 and $4.7. million. The Team recommends budgeting funds to hire a firm to assist the City plan and design major improvements. The Team recommends a five-year implementation timetable. Factoring inflation and contingencies the total estimated costs of implementing these improvements totals $6.7 million to $7.1 million, or about $1.42 million per year over a 5-year period.

E. Next Steps

The next step will be to share the draft plan with the Board of Alderman and hold community meetings to receive input on the plan. More work will need to be done with emergency responders as a network of traffic calming measures is developed. The Mayor and the Board of Alderman will need to further review the cost estimates in the overall context of city budgets. SPCD can work with other Departments to identify other funding sources, such as Safe Routes to School funds. Once an overall budget and financing plan has been established, the Team will be in better position to develop a schedule for implementing the measures.

SPCD in conjunction with DPW and Traffic and Parking will develop a contract to hire an engineering firm to plan and design the major improvements such as pedestrian safety tables.

Actual implementation of construction measures will involve the traditional planning and design process including notice to the affected neighborhood, a community meeting with the Ward Alderman, development of a detailed design and procurement, and management through the Department of Public Works.